1 Preferences

1. *Reflexive.* Every bundle is at least as good as itself.

$$\forall x \in X, x \succsim x$$

2. *Complete.* For every pair of bundles, you strictly prefer one to the other or you are indifferent.

$$\forall x, y \in X, x \succsim y \, or \, y \succsim x \, (or \, both)$$

3. *Transitive.* For every three bundles, if x if at least as good as y and y is at least as good as z then x is at least as good as z. If preferences are transitive we can put bundles in an "**order**".

$$\forall x, y, z \in X, (x \succsim y \,\&\, y \succsim z) \Rightarrow x \succsim z$$

If all three are true, we say that preferences are **rational**.

1.1 Indifference Curves Cannot Cross

If preferences are rational, indifference curves can have any shape, but two distinct indifference cannot intersect.

(Proof in class).

1.2 Families of Preferences

1.2.1 Perfect Substitutes

Preferences where the consumer's willingness to trade-off between the goods is always the same.

Perfect substitutes preference have indifference curves that have a fixed slope. This implies the consumer's willingness to trade-off is the same everywhere.

1.2.2 Perfect Complements

Preferences where the goods must be consumed in fixed proportions.

With perfect complements we have a "recipe".

Left and Right shoes. Consumer consumes pairs of shoes. One left shoe and one right makes a pair of shoes.

L-shaped indifference curves with "kinks" along the line where $l = r$ (line of no-waste)

Apple Pies. Consumer consmes pies. Two apples and one crust to make a pie.

L-shaped indifference curves with "kinks" along the line where $2c = a$ (line of no-waste)

1.2.3 Cobb Douglass

Represent a situation where a consumer gets tired of either good if they have too much of it relative to the other good. The consumer wants to consume the goods in combination.

Curvy indifference curves with a "convex" shape.

1.2.4 Quasi-Linear

Represent a situation where a consumer gets **tired of one of the goods** if they have too much of it relative to the other good.

Greg's preferences over **ice cream** and **money**.

1.2.5 Bads

I want less of one of the goods.

If you have one good that is "good" and one good that is "bad" then the indifference curves slop upwards.

1.3 Further Assumptions: "Well Behaved Preferences"

1.3.1 Monotonicity

How should we rule out "bads" using an assumption on the preference relation?

Monotonicity is an assumption on the preference relation that says that **more is better**.

Strict Monotonicity

(x_1, x_2) and (x_1', x_2')

If I have at least as much of everything, I like it as least as much.

If $x_1 \geq x_1'$ and $x_2 \geq x_2'$ then $(x_1, x_2) \succsim (x_1', x_2')$.

Furthermore if **either of these is strict** $(x_1 > x_1')$ or $(x_2 > x_2')$ or both then $(x_1, x_2) \succ (x_1', x_2')$

(Weak) Monotonicity

If $x_1 \geq x_1'$ and $x_2 \geq x_2'$ then $(x_1, x_2) \succsim (x_1', x_2')$.

Furthermore if **both of these is strict** $(x_1 > x_1')$ **and** $(x_2 > x_2')$ then $(x_1, x_2) \succ (x_1', x_2')$

1.3.2 Example of Monotonicity

Both forms of monotonicity imply:

$$(2, 2) \succsim (2, 1)$$

However with strict monotonicity, we know:

$$(2,2) \succ (2,1)$$

Weak monotonicty allows:

$$(2,2) \sim (2,1)$$

With both forms:

$$(2,2) \succ (1,1)$$